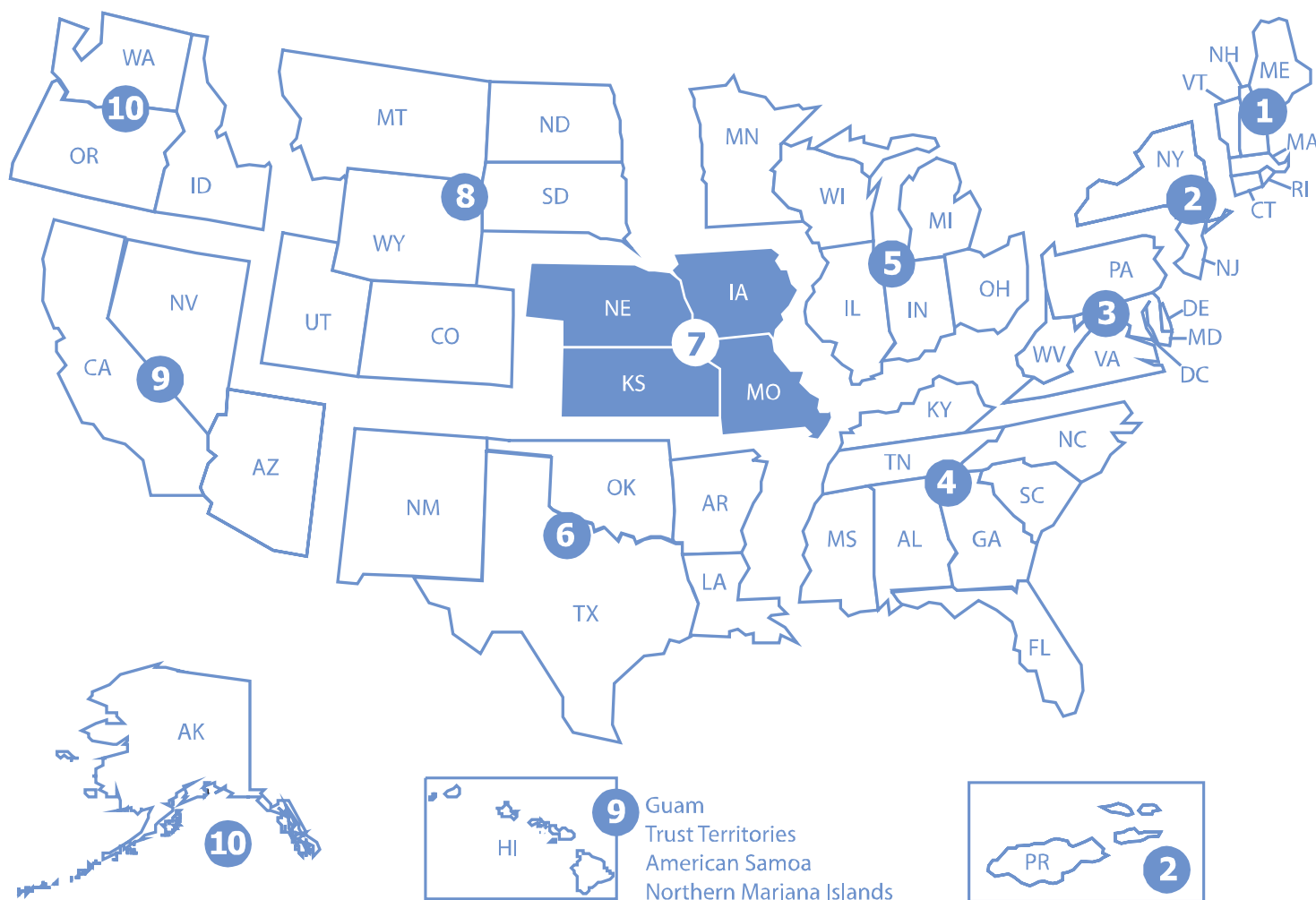




Support Document for the Revised National Priorities List Final Rule – Washington County Lead District-Old Mines



**Support Document for the
Revised National Priorities List
Final Rule
Washington County Lead District—
Old Mines**

March 2008

**State, Tribal, and Site Identification Center
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460**

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EXECUTIVE SUMMARY

Section 105(a)(8)(B) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List (NPL) was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Washington County Lead District-Old Mines site located in Old Mines, Missouri, proposed on September 19, 2007 (72 FR 53509). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in March 2008. Several additional sites are being promulgated concurrently.

INTRODUCTION

This document explains the rationale for adding the Washington County Lead District-Old Mines site located in Old Mines, Missouri, to the National Priorities List (NPL) of uncontrolled hazardous waste sites and also provides the responses to public comments received on this site. The EPA proposed this site on September 19, 2007 (72 FR 53509). This site is being added to the NPL based on an evaluation under the Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in March 2008.

Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq.* in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101[23]). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101[24]). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on September 19, 2007 (72 FR 53463). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on September 19, 2007 (72 FR 53909).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and

- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats as identified below:

- Ground Water Migration (S_{gw})
 - drinking water
- Surface Water Migration (S_{sw})

The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.

 - drinking water
 - human food chain
 - sensitive environments
- Soil Exposure (S_s)
 - resident population
 - nearby population
 - sensitive environments
- Air Migration (S_a)
 - population
 - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100:

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

The following section addresses site-specific public comments. The site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

Agency	U.S. Environmental Protection Agency
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 <i>et seq.</i> , also known as Superfund
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HRS	Hazard Ranking System, Appendix A of the NCP
HRS score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NPL	National Priorities List, Appendix B of the NCP
PA/SI	Preliminary assessment/site inspection
PRP	Potentially responsible party
RCRA	Resource Conservation and Recovery Act of 1976 (U.S.C. 9601-6991, as amended)
RD/RA	Remedial design/remedial action
RI/FS	Remedial investigation/feasibility study
ROD	Record of Decision, explaining the CERCLA-funded cleanup alternative(s) to be used at an NPL site
SARA	Superfund Amendments and Reauthorization Act of 1986, Public Law No. 99-499, stat., 1613 <i>et seq.</i>

Response to Comments

1. List of Commenters/Correspondents

EPA-HQ-SFUND-2007-0687-0003	Correspondence dated September 19, 2007, from Matt Blunt, State of Missouri Office of the Governor
EPA-HQ-SFUND-2007-0687-0005	Comment dated October 10, 2007, from J. McInroe
EPA-HQ-SFUND-2007-0687-0006	Comment dated November 21, 2007, from Francis Chin and Tracy Hester, Partner, Bracewell & Giuliani LLP on behalf of Baker Hughes Oilfield Operations, Inc.
EPA-HQ-SFUND-2007-0687-0006.1	Comment dated November 21, 2007, from Tracy Hester, Partner, Bracewell & Giuliani LLP on behalf of Baker Hughes Oilfield Operations, Inc.

2. Site Description

The Washington County Lead District – Old Mines site (Old Mines) is located in southeastern Missouri in east central Washington County. It consists of soil, sediment, and ground water contaminated with metals, including lead and barium, associated with releases from the historical mining district in the Old Mines study area. Lead mining in Washington County has occurred since the early 18th century, and this district was one of the most productive barite producing areas in the world. It produced 11 million short tons of crude barite ore over an 86-year period from 1885 to 1970. The state of Missouri has identified 1,426 mines or prospects within Washington County.

With the goal of reducing exposure to mining-related contamination as rapidly as possible, EPA in cooperation with the State of Missouri concentrated its initial investigations in the Washington County Lead District on larger mining complexes near population centers including the area around the town of Old Mines, Missouri. Within the Old Mines area, EPA concentrated on nine individual study areas (Study Areas 11 – 19) where large mining complexes existed. EPA was able to obtain sufficient information to characterize seven tailings piles/ponds within six of the nine study areas to include them as sources in the HRS evaluation of the Old Mines area. The releases from these and probably other mining activities in the study area have led to ground water, surface water, and soil contamination throughout the Old Mines area. All three of these contamination routes were evaluated in the HRS evaluation. Scoring either the ground water contamination threat or the surface water contamination threat would have been sufficient to qualify the site for the NPL. However, EPA decided that the public would be better informed of the extent of contamination if all three pathways were evaluated.

The entire Old Mines area is suspected of having severe ground water contamination due to the described mining activities. Widespread ground water contamination attributable to the seven tailing pile/pond sources used in the HRS scoring of the site was documented. Twenty-seven drinking water wells scattered throughout the study area were found to have contamination above drinking water maximum contaminant levels (MCLs) for lead and barium. Twenty-three of these wells exceeded the MCL for lead; three exceeded the MCLs for barium; and one exceeded the MCLs for both lead and barium. Based on these data, 76 residents are subject to exposure to contamination above the MCLs for lead and/or barium. An additional 36 drinking water wells were found to have lead and/or barium contamination significantly above background levels at the time of sampling. This contamination release and these threatened targets

were evaluated in the HRS scoring as being within one aquifer (see page 3 of the HRS documentation record as proposed) and also as two separate subaquifers (see Appendix A of the HRS documentation record as proposed). This was done because an aquifer discontinuity is suspected to exist due to topographic highs that might divide this aquifer into two separate aquifers, but this division could not be completely documented due to the complicated nature of the area's hydrogeology. Both the overall aquifer and individual subaquifer pathway scores resulted in HRS site scores above the listing threshold of 28.50.

In addition, contaminated sediment in wetlands at the tailings piles/ponds and contaminated soil at nearby residences were documented and used to score the surface water and soil exposure pathways. Contaminated wetlands were associated with each of the seven tailing pile/pond sources, and each of these seven water bodies were shown to have individual HRS site scores above the listing threshold of 28.50 (see Appendix B of the HRS documentation record as proposed).

Regarding the soil exposure pathway, the seven tailings piles/ponds were documented as areas of observed contamination (AOCs). In addition, samples documenting individual points of soil contamination on residences make up an additional 51 AOCs. Based on these data, 38 residents are subject to exposure to contamination above the MCL for barium, and an additional 86 residents are subject to barium contamination significantly above background levels at the time of sampling.

3. Summary of Comments/Correspondence

Mr. Matt Blunt of the State of Missouri Office of the Governor submitted a comment supporting the listing of this site.

J. McInroe, a resident of the Old Mines area, submitted a comment supporting the listing of this site.

Tracy Hester, Partner, Bracewell & Giuliani LLP on behalf of Baker Hughes Oilfields, Inc. (Baker Hughes), commented that "EPA should either revise its proposed listing for the Old Mines area to reflect the areas actually sampled, characterized and investigated, or EPA should postpone adding the Old Mines area to the NPL until EPA acquires those data." As a result, Baker Hughes indicated that "the boundaries for the Old Mines area are too broad," and they "have no relationship to the designated facilities or to the seven study areas used for the Hazard Ranking System ("HRS") scoring."

3.1 Support for Listing

Mr. Matt Blunt of the State of Missouri Office of the Governor submitted a comment supporting the listing of this site.

J. McInroe, a resident of the Old Mines area, submitted a comment supporting the listing of this site.

In response, EPA is adding the Old Mines site to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the site to determine the appropriate response action(s). Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and, upon more detailed investigation, may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the risks involved, State priorities, further site investigation, other response alternatives, and other factors as appropriate.

3.2 Extent of Site

Baker Hughes commented that “the boundaries for the Old Mines area are too broad,” and they “have no relationship to the designated facilities or to the seven [sic] study areas used for the Hazard Ranking System (“HRS”) scoring.” It argued that a “facility” under CERCLA must maintain a logical nexus between the geographical scope of the area of contamination and the defined boundaries of the facility. It stated that “[i]n this regard, non-contiguous facilities may be treated as one facility where they are reasonably related on the basis of geography or potential threat to public health or welfare or the environment.” However, Baker Hughes asserted that the “necessary nexus between the geographical scope of the area of contamination and the ‘facility . . . [to become] . . . unacceptably attenuated” by unnecessarily expanding the area’s geographic scope to include many uncharacterized mines and prospects within the Old Mines area boundaries and not focusing the proposed NPL listing to the seven tailings ponds within the nine study areas.

Baker Hughes explained that the proposed boundaries for the Old Mines area encompass a much greater area than the nine study areas underlying the proposed NPL listing. It pointed out that while the HRS documentation record indicated that only seven tailings ponds were used to propose the NPL listing for the Old Mines area, EPA included a number of tailings pond sites that were not sampled and not listed as possible sources in the site’s broad boundary. Baker Hughes surmised that “[b]y using the HRS scores from a select few areas and then attributing those scores to a much larger geographic area, EPA’s approach undermines the purposes of a ‘facility’ designation and the remedial intent of CERCLA.” It stated that “[a]s drawn, the current proposed boundary impermissibly sweeps large areas into the ‘facility’ without an adequate nexus to areas of actual contamination.”

In response, EPA’s characterization of the Old Mines site for the HRS evaluation is consistent with the definition of “site” as presented in the HRS. HRS Section 1.1, *Definitions*, defines “site” as:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between sources.

For HRS scoring purposes, the Old Mines site consists of both sources and areas of contaminated surface soil and the ground water and surface water that became contaminated due to migration from the sources. Specifically, it includes seven tailings piles/ponds as sources/AOCs (within six of the nine study areas represented on Figure 2 of the HRS documentation record as proposed) plus 51 discrete AOC points of contaminated soil at residences (see HRS Section 2.2, *Characterize sources*, and its subsections; HRS Section 5.0.1, *General considerations*; pages 19-48 and 111-118 of the HRS documentation record as proposed; and Reference 59, Figure 12 of the HRS documentation record as proposed). In addition, the Old Mines site consists of any releases from those sources to the environment including the ground water contamination plume and seven water bodies associated with the contaminated wetlands (see pages 55-72 and 84-85 of the HRS documentation record as proposed, and Reference 59, Figures 10 and 11 of the HRS documentation record as proposed).

The scoring for each of the seven water bodies under the surface water pathway is presented in Appendix B of the HRS documentation record as proposed. Each of these water bodies scores above the threshold of 28.50.

The HRS documentation record presents an overall ground water pathway score based on a single continuous aquifer underlying the Old Mines area, and the score for this aquifer represents a shared overall ground water contamination risk throughout the area. The HRS documentation record also presents individual pathway scores for the same area based on two subaquifers. It is suspected that two

subaquifers may exist in this area due to a topographic high acting as an aquifer discontinuity. However, whether the discontinuity separated the area-wide aquifer into two completely separate subaquifers could not be documented due to the complicated nature of the area's hydrogeology. Both the overall and individual subaquifer pathway scores result in an HRS site score above the listing threshold of 28.50 (see pages 3 and 50-55, and Appendix A of the HRS documentation record as proposed).

The foregoing approach of identifying multiple sources of contaminated soil, ground water, and surface water is appropriate and reasonable under the HRS definition of "site" cited above.

Regarding Baker Hughes' assertion that EPA included a number of unsampled tailings ponds as part of the site's "broad boundary," the HRS documentation record as proposed (pages 19-48 and 90-110) states that only the seven tailings piles/ponds identified as sources/AOCs were used to propose the NPL listing for the Old Mines area. The commenter may have been confused by Figures 1 and 2 of the HRS documentation record as proposed in which nine smaller study areas each associated with tailings piles/ponds are shown within one larger boundary. The larger boundary and the smaller nine study areas were presented in the HRS documentation record only for the purposes of orienting the reader to EPA's general area of concern within the Old Mines area and explaining EPA's approach for investigating contamination in the Old Mines area. The boundaries shown in Figures 1 and 2 are not "facility" boundaries, and do not represent the exact boundaries of the ground water, surface water, and soil contamination.¹ As described below, these boundaries are not yet determined.

As explained in the *Federal Register* notice proposing this site to the NPL, HRS scoring and the subsequent listing of a release merely represent the initial determination that an area may need to be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (see 72 FR 53509). Future steps involve a Remedial Investigation/Feasibility Study (RI/FS) to further characterize the nature and extent of contamination. During the RI/FS process and continuing throughout the Superfund remediation process, the release may be found to comprise a larger or smaller area than originally thought based on preliminary site investigation work, as more information is learned about the source(s) and the migration of contamination (see *Washington State Department of Transportation v. U.S. E.P.A.*, 917 F.2d 1309). Through these future steps of investigation and data collection the CERCLA "facility" will progressively become more defined. The HRS is solely a screening device to assist EPA with making a preliminary division between sites that justify further consideration due to contamination and associated risk and those that do not. Sites recommended for further investigation are listed on the NPL.

While the nine study areas and the larger Old Mines area illustrated on Figures 1 and 2 of the HRS documentation do not represent the specific boundaries, they do represent a general area in which EPA is concerned based on preliminary site investigation that sources of contamination are located there or that released contamination has come to be located there. Most of the study areas contain uncharacterized tailings piles/ponds that are possible sources of lead releases. EPA gave notice of this concern in Figures 1 and 2, in the Site Summary section (pages 8-10), and in the Other Possible Sources section (pages 48-49) of the HRS documentation record as proposed (see also References 9-13, 57, and 59).

In addition, it is reasonable that ground water contamination could have migrated or is currently migrating throughout the entire Old Mines area. Geology in this area is characterized by karst features as well as faulting that could result in contaminated water moving uninhibitedly and rapidly to and from different

¹ Page 1 of the HRS documentation record as proposed actually states under the "general location of the site" section that "[t]he Old Mines site is in east central Washington County and consists of nine study areas (study areas 11 through 19) delineated by EPA Region 7." This location is more expansive than what EPA actually based the HRS site score on, which were the sources and the attributable releases only.

parts of the Old Mines area. The contaminated area could also be smaller if areas within the plume are found to not be contaminated or to not pose significant risk during future investigation.

Furthermore, it is reasonable to think that surface water migration has occurred or will occur throughout the Old Mines area. The area is part of the same overall surface water drainage basin. Runoff from all nine of the study areas is likely to contain contamination, and the overland and in-stream flow paths for the tailings ponds often commingle and ultimately have a shared terminus in Big River as described on page 80 and illustrated on Figure 11 of Reference 59 and Figures 1 and 2 of Reference 60 of the HRS documentation record as proposed.

Moreover, most of the 1,426 mines or prospects that the state of Missouri has identified within Washington County have not been characterized for HRS purposes. It is reasonable to assume that additional sources of contamination exist that could release to the ground water or surface water, or could come to be located as contaminated soil at additional residences (see Reference 57 of the HRS documentation record as proposed).

Finally, EPA disagrees that it should postpone the proposed listing until it obtains additional information. EPA is not required to score all of the contamination suspected to be part of a site to document that the site qualifies for the NPL. As explained above and in the proposed rule, the further delineation of the CERCLA facility is a subsequent step in the Superfund remediation process. The decision to not wait to list the site until further sampling is consistent with decisions by the U.S. Court of Appeals for the D.C. Circuit. This Court has stated “the NPL is simply a rough list of priorities, assembled quickly and inexpensively to comply with Congress’ mandate for the Agency to take action straightaway” (see *Eagle-Picher II*, 759 F.2d at 932), and “EPA’s decision to reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites . . . is reasonable and fully in accord with congressional intent” (see *Eagle-Picher I*, 759 F.2d at 921).

4. Conclusion

The original HRS score for this site was 76.81. Based on the above response to comments, the score remains unchanged. The final scores for the Washington County Lead District–Old Mines site are:

Ground Water: 100.00
Surface Water: 60.00
Soil Exposure: 100.00
Air: Not Scored
HRS Score: 76.81